



# CBMS881

## Major Research Project in Molecular Sciences

S1 Day 2019

*Dept of Molecular Sciences*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff

Convenor

Joanne Jamie

[joanne.jamie@mq.edu.au](mailto:joanne.jamie@mq.edu.au)

Contact via Email

4 Wally's Walk 231

Anytime available - best to confirm by email

Credit points

16

Prerequisites

(Admission to MRadiopharmSc or MBiotech or MScInnovation) and (16cp at 800 level or above) and permission by special approval

Corequisites

Co-badged status

Unit description

This unit provides students the opportunity to undertake a research project supervised by leaders in the area of molecular sciences or radiopharmaceutical science. Students will acquire research skills, including literature searching, project planning, experimental design, data analysis and scientific communication. Interested students meeting the eligibility criteria should discuss their research interests with the unit convenor.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

Conduct research to solve complex problems in areas relevant to the field of molecular and/or radiopharmaceutical sciences.

Use laboratory skills common in molecular and/or radiopharmaceutical sciences and conduct laboratory work in a safe and responsible manner.

Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular

and/or radiopharmaceutical sciences.

Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.

Communicate in written and oral format research findings of molecular and/or radiopharmaceutical sciences to scientific audiences.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Lit. review and research plan</u>	0%	Yes	Week 4
<u>Research report</u>	95%	No	Week 13
<u>Seminar</u>	5%	No	Week 14

### Lit. review and research plan

Due: **Week 4**

Weighting: **0%**

**This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)**

You will develop a literature review and research/internship plan for submission to your supervisor by week 4. Feedback will be given on the report by the supervisor.

On successful completion you will be able to:

- Conduct research to solve complex problems in areas relevant to the field of molecular and/or radiopharmaceutical sciences.
- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular and/or radiopharmaceutical sciences.
- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.
- Communicate in written and oral format research findings of molecular and/or radiopharmaceutical sciences to scientific audiences.

### Research report

Due: **Week 13**

Weighting: **95%**

The **CBMS881 report** will be examined by **two examiners** at least one of whom should be external to the university. Their marks will contribute (37.5% each). The **Supervisor** should

contact potential examiners for their availability and provide their contact details to the unit convenor at the beginning of Academic Week 11.

The CBMS881 report can be submitted either as a **dissertation** (*Option 1*) or as a **scientific manuscript** suitable for publication (*Option 2*). Please discuss with your supervisor the most suitable format for your report. Details are available in the **CBMS881 Report** section.

The **Supervisor** will also provide to the unit convenor a mark /20% and accompanying report on the overall research potential of the student within CBMS881. This will include marks toward the quality of research conducted by the student, and their ability to understand and communicate in a scientifically literate manner the research problem (incorporating a review of the relevant literature), the results and discussion of the research and coherent conclusions.

On successful completion you will be able to:

- Conduct research to solve complex problems in areas relevant to the field of molecular and/or radiopharmaceutical sciences.
- Use laboratory skills common in molecular and/or radiopharmaceutical sciences and conduct laboratory work in a safe and responsible manner.
- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular and/or radiopharmaceutical sciences.
- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.
- Communicate in written and oral format research findings of molecular and/or radiopharmaceutical sciences to scientific audiences.

## Seminar

Due: **Week 14**

Weighting: **5%**

A 20-min seminar presentation to the Department will be scheduled during the exam week, to give the student an opportunity to present research aims and outcomes.

On successful completion you will be able to:

- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular and/or radiopharmaceutical sciences.
- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.

- Communicate in written and oral format research findings of molecular and/or radiopharmaceutical sciences to scientific audiences.

## Delivery and Resources

**Delivery:** This is a full-time one semester unit.

**Resources:** IT facilities available in the research group, Department as well as the library will be available for literature review, word processing and data analysis. Additional facilities, such as access to specialist facilities or the use of specific instruments as required by the project will be organised by the supervisor.

## Unit Schedule

This unit requires an average of 30-40 hours per week commitment. Laboratory work, will be with supervision. Normal laboratory working hours are Mon-Fri: 9 am - 5 pm. After hours laboratory work may be required as approved by the supervisor and Head of Department.

Lab safety induction must be undertaken **BEFORE** working in the research labs - contact your supervisor to organise this.

## Learning and Teaching Activities

### Overview

CBMS881 provides research training and skills for students interested in undertaking a research/ internship project.

### Research work

You will undertake any safety and/or equipment training courses as required. You will undertake research work in the research lab, under supervision. You will have to maintain a laboratory book, where daily activities are recorded. You are also required to attend group meetings and/or seminars, as required by the supervisor. At the end of the semester, you are invited to present a short seminar, on the research work undertaken.

### Report writing

The CBMS881 report can be submitted either as a dissertation or as a scientific manuscript suitable for publication. Please discuss the most suitable format for your report with your supervisor. Kindly be aware of the University's policy on information honesty, available from [http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html).

### Seminar

At the end of the semester, you are invited to present a short seminar, on the research work undertaken.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](https://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

The University declares that it is a ‘fundamental principle’ that “all staff and students act with integrity in the creation, development, application and use of ideas and information. This means that:

- all academic work claimed as original is the work of the author making the claim
- all academic collaborations are acknowledged
- academic work is not falsified in any way
- when the ideas of others are used, these ideas are acknowledged appropriately.

Specifically, the dissertation must be checked with anti-plagiarism software such as Turnitin before submission.

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

### Learning outcomes

- Conduct research to solve complex problems in areas relevant to the field of molecular and/or radiopharmaceutical sciences.

- Use laboratory skills common in molecular and/or radiopharmaceutical sciences and conduct laboratory work in a safe and responsible manner.
- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular and/or radiopharmaceutical sciences.
- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.
- Communicate in written and oral format research findings of molecular and/or radiopharmaceutical sciences to scientific audiences.

## **Assessment tasks**

- Lit. review and research plan
- Research report
- Seminar

## **PG - Discipline Knowledge and Skills**

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

## **Learning outcomes**

- Conduct research to solve complex problems in areas relevant to the field of molecular and/or radiopharmaceutical sciences.
- Use laboratory skills common in molecular and/or radiopharmaceutical sciences and conduct laboratory work in a safe and responsible manner.
- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular and/or radiopharmaceutical sciences.
- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.
- Communicate in written and oral format research findings of molecular and/or radiopharmaceutical sciences to scientific audiences.

## **Assessment tasks**

- Lit. review and research plan
- Research report
- Seminar



## PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

### Learning outcomes

- Conduct research to solve complex problems in areas relevant to the field of molecular and/or radiopharmaceutical sciences.
- Use laboratory skills common in molecular and/or radiopharmaceutical sciences and conduct laboratory work in a safe and responsible manner.
- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular and/or radiopharmaceutical sciences.
- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.
- Communicate in written and oral format research findings of molecular and/or radiopharmaceutical sciences to scientific audiences.

### Assessment tasks

- Lit. review and research plan
- Research report
- Seminar

## PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

### Learning outcomes

- Conduct research to solve complex problems in areas relevant to the field of molecular and/or radiopharmaceutical sciences.
- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular

and/or radiopharmaceutical sciences.

- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.

## **Assessment tasks**

- Lit. review and research plan
- Research report
- Seminar

## **PG - Effective Communication**

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

## **Learning outcomes**

- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular and/or radiopharmaceutical sciences.
- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.
- Communicate in written and oral format research findings of molecular and/or radiopharmaceutical sciences to scientific audiences.

## **Assessment tasks**

- Lit. review and research plan
- Research report
- Seminar

## **PG - Engaged and Responsible, Active and Ethical Citizens**

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

## Learning outcomes

- Conduct research to solve complex problems in areas relevant to the field of molecular and/or radiopharmaceutical sciences.
- Use laboratory skills common in molecular and/or radiopharmaceutical sciences and conduct laboratory work in a safe and responsible manner.
- Collect, record and critically interpret varied data and incorporate qualitative and quantitative evidence into scientifically defensible arguments in the area of molecular and/or radiopharmaceutical sciences.
- Interpret, critically analyse and synthesise published literature of relevance to molecular and/or radiopharmaceutical sciences.

## Assessment tasks

- Lit. review and research plan
- Research report
- Seminar

## Changes from Previous Offering

A/Prof. Joanne Jamie is convening the unit. A hurdle task of a literature review and research plan has been added to assist in student understanding of their research project, provide supervisor feedback and help in student time management of the report writing. A supervisor formal mark will also contribute to the final grade.

## CBMS881 Report Guidelines

The CBMS881 report can be submitted either as a **dissertation** (*Option 1*), suitable for both a research project (*Option 1.A*) as well as a research internship project (*Option 1.B*); or as a **scientific manuscript** suitable for publication (*Option 2*), suitable for a research project. Please discuss with your supervisor the most suitable format for your report.

**A softcopy (PDF or MS Word) of the dissertation** should be **emailed to the unit convenor**, to facilitate rapid assessment, especially by external examiners.

### General guidelines:

Clarity of expression, presentation of results and their discussion and citation of relevant literature will be taken into account in the assessment. Figures and Tables as required to present your results are essential. Large amounts of data (verifying spectral data, computer programs, etc.) should be placed as Appendices to the dissertation.

The report will normally require considerable effort and should be developed during the course of the semester and completed in the last few weeks prior to submission.

The report should be certified as your own work by the supervisor - scanned signatures may be used.

### Option 1: Report by Dissertation (a concise thesis)

Dissertations should not exceed 50 pages of doublespaced text (12 pt in a legible font).

#### A. Research Project Report

The following sections must be included in your research dissertation:

1. A **cover page** giving the title of the project, your name and qualifications, followed by a statement on the course details, e.g. "A dissertation submitted in partial fulfilment of the M. .... Degree" (please specify degree here)
2. A 300-word **abstract**
3. **Abbreviation list** specific to your work
4. **Introduction** summarising background literature and the scope of the project
5. **Materials and Methods**
6. **Results & Discussion** (together or as separate sections)
7. **Conclusions**
8. **References** including titles and full author listing of cited papers
9. **Appendix** (optional: max. 20 pages, in addition to the report's 50 pages)

#### B. Research Internship Report

The following sections must be included in your research dissertation:

1. A **cover page** giving the title of the project, your name and qualifications, followed by a statement on the course details, e.g. "A dissertation submitted in partial fulfilment of the M. .... Degree" (please specify degree here)
2. A 300-word **abstract**
3. **Abbreviation list** specific to your work
4. **Introduction** summarising the scope of the project
5. **Learning Outcomes**
6. **Self Evaluation**
7. **Appendix: additional materials** (optional: max. 20 pages, in addition to the report's 50 pages)
8. **References** including titles and full author listing of cited papers

### Option 2: Research Report by Publication-style Manuscript

This is in the form of a manuscript suitable for submission to a leading international peer-reviewed publication in the area of your project. Your contribution must be sufficient to justify yourself as the first author of the paper, with the supervisor as corresponding author. The report should adhere to the overall guidelines for authors set out by the selected journal. Page

restrictions set by the journal can be exceeded, to a maximum of 20%, if justified.

The following sections must be included in your manuscript:

- A **cover page** giving the title of the project, your name and qualifications followed by a statement on the course details, e.g. "A report submitted in partial fulfilment of the M. .... Degree," (please specify degree here) " for submission to ... "(please provide the full name of the journal name here).
- A **manuscript** including the following general sections:
  1. A 300-word **Abstract**
  2. **Abbreviation list** specific to your work
  3. **Introduction** summarising background literature and the scope of the project
  4. **Materials and Methods**
  5. **Results & Discussion** (together or as separate sections)
  6. **Conclusions**
  7. **References** including titles and full author listing of cited papers
  8. **Additional or Supplementary information** (optional: max. 20 pages)